

Silicon CTE
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US-PAT-NO: RE37920

DOCUMENT-IDENTIFIER: US RE37920 E

TITLE: Flat panel display

DATE-ISSUED: December 3, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Moffatt; Dawne M.	Corning	NY	N/A	N/A
Neubauer; Dean V.	Horseheads	NY	N/A	N/A

ASSIGNEE INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE
Corning Incorporated	Corning	NY	N/A	N/A	02

APPL-NO: 09/ 060741

DATE FILED: April 15, 1998

REISSUE-DATA:

US-PAT-NO	DATE-ISSUED	APPL-NO	DATE-FILED
05508237	April 16, 1996	288300	August 10, 1994

PARENT-CASE:

This application is a Continuation-In-Part of U.S. Ser. No. 08/212,060, filed Mar. 14, 1994, now abandoned.

INT-CL: [07] C03C003/078,C03C003/091

US-CL-ISSUED: 501/69, 501/70 , 501/66 , 65/99.2

US-CL-CURRENT: 501/69, 501/66 , 501/70 , 65/99.2

FIELD-OF-SEARCH: 501/66; 501/69 ; 501/70 ; 65/90 ; 65/99.2

REF-CITED:

U.S. PATENT DOCUMENTS				
PAT-NO	ISSUE-DATE	PATENTEE-NAME		
US-CL				
3496401	February 1970	Dumbaugh, Jr.	N/A	N/A
N/A				
3978362	August 1976	Dumbaugh, Jr. et al.	N/A	N/A
N/A				
4012263	March 1977	Shell	N/A	N/A
N/A				
4060423	November 1977	Thomas	N/A	N/A
N/A				
4180618	December 1979	Alpha et al.	N/A	N/A
N/A				
4255198	March 1981	Danielson et al.	N/A	N/A
N/A				
4302250	November 1981	Danielson	N/A	N/A
N/A				
4394453	July 1983	Dumbaugh, Jr.	N/A	N/A
N/A				
4409337	October 1983	Dumbaugh, Jr.	N/A	N/A
N/A				
4441051	April 1984	Thomas	N/A	N/A
N/A				
4634683	January 1987	Dumbaugh, Jr.	N/A	N/A
N/A				
4634684	January 1987	Dumbaugh, Jr.	N/A	N/A
N/A				
4824808	April 1989	Dumbaugh, Jr.	N/A	N/A
N/A				
4994415	February 1991	Imai et al.	N/A	N/A
N/A				
5116787	May 1992	Dumbaugh, Jr.	N/A	N/A
N/A				
5116788	May 1992	Dumbaugh, Jr.	N/A	N/A
N/A				
5116789	May 1992	Dumbaugh, Jr.	N/A	N/A
N/A				
5348916	September 1994	Kushitani et al.	N/A	N/A
N/A				
5374595	December 1994	Dumbaugh, Jr. et al.	N/A	N/A
N/A				

5387560 N/A	February 1995	Ponthieu et al.	N/A	N/A
5489558 N/A	February 1996	Moffatt et al.	N/A	N/A

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0 559 389	August 1993	EP	
0 672 629	September 1995	EP	
2675795	October 1992	FR	
62-7874	July 1988	JP	
63-283710	November 1988	JP	
63-221315	August 1989	JP	
4-16003	June 1992	JP	
1992-175242	June 1992	JP	

ART-UNIT: 1108

PRIMARY-EXAMINER: Group; Karl

ATTY-AGENT-FIRM: Nixon Peabody LLP

ABSTRACT:

A flat panel display comprising an aluminosilicate glass panel that exhibits a strain point higher than 640.degree. C., a weight loss less than 20 mg/cm.sup.2 after immersion for 24 hours in an aqueous 5% by weight HCl solution at 95.degree. C., a CTE in the range of 31-57.times.10.sup.-7 /.degree. C., is nominally free of alkali metal oxides and has a composition consisting essentially of, as calculated in percent by weight on an oxide basis, 49-67% SiO.sub.2, at least 6% Al.sub.2 O.sub.3, the Al.sub.2 O.sub.3 being 6-14% in conjunction with 55-67% SiO.sub.2 and 16-23% in conjunction with 49-58% SiO.sub.2, SiO.sub.2 +Al.sub.2 O.sub.3 >68%, 0-15% B.sub.2 O.sub.3, at least one alkaline earth metal oxide selected from the group consisting of, in the proportions indicated, 0-21% BaO, 0-15% SrO, 0-18% CaO, 0-8% MgO and 12-30% BaO+CaO+SrO+MgO.

27 Claims, 0 Drawing figures

Exemplary Claim Number: 32

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Brief Summary Text - BSTX (19):

Accordingly, extensive research has been directed at developing glasses designed to meet at least three general requirements. Initially, the glasses had to be adapted to use in fabricating poly-Si devices. Next, they had to be capable of being formed into sheet by the overflow downdraw process. Finally, they had to have linear CTEs that closely matched silicon.

Detailed Description Text - DETX (9):

Where silicon chips are to be mounted on the glass, and a CTE of $31\text{--}44 \times 10^{-7} \text{ /}^\circ\text{C}$ is necessary, BaO content is preferably maintained low. Other alkaline earth metal oxides and/or Al_2O_3 may be substituted.

Detailed Description Text - DETX (16):

The other CTE level is based on a desire to match silicon, thus permitting direct chip attachment. Silicon has a CTE of $36 \times 10^{-7} \text{ /}^\circ\text{C}$. Accordingly, a CTE range for glass panels may be $31\text{--}44 \times 10^{-7} \text{ /}^\circ\text{C}$, preferably $32\text{--}40 \times 10^{-7} \text{ /}^\circ\text{C}$.

Detailed Description Text - DETX (30):

Preferred CTE ranges for glass panels adapted to use with silicon have been noted as having a CTE range of $32\text{--}40 \times 10^{-7} \text{ /}^\circ\text{C}$. Glasses in aluminosilicate sub-families C' and D' have CTEs within that range and have compositions that consist essentially of, as calculated in weight percent on an oxide basis: